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ABSTRACT

A study investigated the reading comprehension levels, aptitude scores, high school graduation status, and years of education of United States Navy recruits and the relationship among these variables. Data for the study were obtained from the monthly computer managed instruction system reports on Navy recruit characteristics, which in turn is based on recruits' performances on the Gates-MacGintie Reading Comprehension Test and the Armed Services Vocational Aptitude Battery. Analysis indicated that while the recruit population remained relatively stable, monthly distributions varied for such factors as reading grade level (RGL) scores, high school graduation status, high school graduate recruits who scored above and below the 6.0 RGL criterion, and high school graduation status of recruits who scored below the 6.0 RGL. Analysis also indicated that the proportion of recruits who obtained RGL scores below 6.0 is higher for high school graduates than for non-high school graduates. The findings suggest that the management of the Navy's Academic Remedial Training Program (ART) needs to be prepared to make adjustments in resource requirements as the recruit population changes throughout the year. By being aware of these changes, more efficient allocation and use of resources can be achieved for the ART program and the recruit training centers. (RBW)

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READING COMPREHENSION AND EDUCATIONALLY RELATED CHARACTERISTICS OF U.S. NAVY RECRUITS: TWELVE-MONTH PROFILE FROM JUNE, 1983, TO MAY, 1984

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Introduction

During World War II, the Department of the Navy initiated programs designed to remediate deficiencies in academic skills among selected personnel. However, an official policy on remedial training in basic skills was not established until 1978. The policy statement issued by the Secretary of the Navy on 2 June 1978 stated: "It is the policy of the Department of the Navy to provide, when indicated, on-duty remedial job-relevant basic skills training in order to fill personnel requirements" (SECNAVINST 1510.3, 1978, p. 1). [Job-relevant basic skills are defined as "those capabilities prerequisite to efficient completion of Navy training programs, adequate job performance and career advancement. Notable among these are literacy, study and computational skills" (p. 1).] In addition to new programs being developed as a result of the policy statement, fundamental skills training programs that were already operational were given official recognition. One operational program, Academic Remedial Training (ART), provides instruction for recruits in basic reading and study skills as well as verbal skills needed to complete the demanding academic requirements of recruit training.

The ART Program was officially initiated by the Naval Technical Training Command in 1967 at each of the Navy's three Recruit Training Centers as a remedial reading course. The courses at the three sites evolved with dissimilar curricula and testing plans due to the autonomy permitted in course development. Eventually, the Chief of Naval Technical Training recognized a need for a standardized curriculum and testing plan. The prescribed curriculum and testing procedures were implemented in 1978 (CNTECHTRAINST 1540.42). The scope of the curriculum included both reading and study skills (Chief of Naval Technical Training, 1978; Bowman, Kaiser, Jones, & Petry, 1984). A verbal skills curriculum that focuses on listening and speaking skills, primarily for

recruits who speak English as a second language, was added to the program at the Orlando and San Diego Recruit Training Centers in 1981 (Chief of Naval Technical Training, 1980).

The commitment of the Navy to provide fundamental skills training for enlisted personnel was reiterated through a policy statement by the Chief of Naval Operations in 1982. Specific skills identified for remediation were reading, mathematics, and communication skills (OPNAVINST 1510.11, 1982, p. 1). The policy states also that "A major goal of enlisted fundamental skills training is to achieve a minimum reading competency of the ninth grade" (p. 1).

Historically, the singular purpose of ART has been to assist recruits in acquiring the language skills required to complete recruit training successfully. While the ultimate purpose remains the same, the addition of the verbal skills component to the program expanded the scope of remediation to include listening and speaking skills of recruits who are primarily speakers of English as a second language. The population served by the program has been delimited to enlisted personnel who have not yet begun recruit training or have encountered academic difficulty after beginning recruit training.

The implementation of the standardized ART reading curriculum required the use of a Computer-Managed Instruction (CMI) system to perform test scoring functions. The CMI system is utilized to score the screening, diagnostic, and criterion tests employed in the program. A product of using the CMI system for test scoring is a data base on the reading comprehension skill levels and educationally related characteristics of all Navy recruits. In addition, data on skill deficiencies and criterion test performance of ART students are available from computer records. Monthly reports on the educational, aptitudinal, and reading characteristics of the total recruit accessions are routinely prepared and distributed to ART Program management personnel.

Problem

The problem defined for this study was to investigate the reading comprehension and educationally related characteristics and relationships among selected variables that describe the Navy's recruit population. The recruits who entered the Navy between June, 1983, and May, 1984, were the subjects who provided the data to address the problem. The variable of primary interest was the recruit's grade level score on reading comprehension. Other variables employed in the study were years of education, aptitude score, high school graduation status, and month of entry into the Navy.

Hypotheses

After performing descriptive analyses of the data on selected variables, six null hypotheses were tested statistically to identify differences among recruits on particular variables. The hypotheses tested were the following:

1. There are no differences in the distributions of recruits classified by reading grade level (RGL) category and month of entry into the Navy.
2. There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy.
3. There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy.
4. There is no difference in the distributions of non-high school graduate recruits classifed by the 6.0 RGL criterion and month of entry into the Navy.
5. There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy.

6. There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion.

The .05 level of significance was used in testing the hypotheses.

The significance of the study is based on two considerations. First, the analyses could identify factors on which the recruit population varies across a 12-month period. Such information would be useful to ART Program management personnel in planning for the allocation and utilization of resources (e.g. staff, facilities, and instructional materials) more efficiently. In particular, variablity in the numbers of recruits who need reading remediation would have a direct effect on the requirements for staffing and instructional materials. Second, this study could demonstrate the desirability of using CMI system data to monitor and manage the ART Program. Since these data are reported routinely to program management personnel, the data are readily available to use in making decisions regarding program needs and operations.

Related Research

Many research studies have been conducted on the reading skill levels of Navy enlisted personnel and training materials because of the importance of reading skills for success in training and job performance. Hoiberg, Hysham, and Berry (1974) reported a significant relationship between reading skills and successful completion of the first enlistment term in the Navy. Biersner (1975) found that many Navy training manuals are written at the 12th grade reading ability level or higher. Zierdt (1976) and Sticht (1982) concluded that the reading abilities of many recruits do not meet the skill requirements of widely used Navy materials.

Several studies have described the reading skill levels of the Navy recruit population based on the Gates-MacGinitie Reading Tests. Duffy and

Nugent (1978) found a median RGL of 11.9 on comprehension as a result of testing 31,575 recruits at the Recruit Training Center in San Diego between May, 1974, and May, 1975. The data showed that 2.8% of the recruits scored below the 4.0 RGL and 9.6% scored below the 6.0 RGL. They concluded that the reading skill levels of many recruits are well below the readability levels of the print materials used in recruit training and daily job tasks.

Bowman and Kerr (1979) reported that a sample of 14,503 recruits tested in the first few months of 1979 had a median RGL of 11.0 on comprehension while 1.1% scored below the 4.0 RGL and 5.2% scored below the 6.0 RGL. In a one-year study (1981), they found that 79,350 recruits who entered the Navy between June, 1980, and May, 1981, had a median RGL of 11.0 on comprehension with .7% scoring below the 4.0 RGL and 4.3% scoring below the 6.0 RGL. In a subsequent study (1982) based on 84,123 recruits who entered the Navy between June, 1981, and May, 1982, they reported a median RGL of 11.2 while .5% scored below the 4.0 RGL and 3.6% scored below the 6.0 RGL. They found in a more recent study (1983) on 77,347 recruits who entered the Navy between June, 1982, and May, 1983, that the median RGL was 11.4 with .9% scoring below the 4.0 RGL and 3.8% scoring below the 6.0 RGL.

The research studies indicate that reading skills are strongly related to the success of Navy enlisted personnel while the readability levels of many training and job materials are very demanding with respect to the skill levels required for their use. Descriptive research data reveal that the reading comprehension levels of recruits declined between 1974-75 and 1979. Later studies suggest that the median reading comprehension level of recruits has begun to increase after a brief period of stability at approximately the 11th grade level.

Procedures

The data utilized in this study were obtained from the monthly CMI reports on Navy recruit characteristics and test performance. Data were available on 67,740 recruits who entered the Navy between June, 1983, and May, 1984. The reports provided data on four variables used in this study: years of education, high school graduation status, aptitude test scores, and reading comprehension grade level scores. A fifth variable, month of entry into the Navy, was defined by the month for which each report was prepared.

The Gates-MacGinitie Reading Comprehension Test (1978) and the Armed Services Vocational Aptitude Battery (1967-80) are the two tests for which data were reported. The Gates-MacGinitie, Levels D-F, is used as a screening instrument with all recruits who enter the Navy. An algorithm is used with the paragraph comprehension and verbal expression scores for the Armed Services Vocational Aptitude Battery to estimate the reading skill level of each recruit and to assign the appropriate level of the Gates-MacGinitie. During the time period covered by this study, the recruits who scored below the 6.0 RGL on the first administration of the Gates-MacGinitie were retested with an alternate form of Level D. (The data from the first administration of the Gates-MacGinitie are used in this study.) Recruits who scored below the 6.0 RGL on the second administration of the Gates-MacGinitie were assigned to ART. (Recruits may also be assigned to ART if they encounter academic difficulties during recruit training.) The 6.0 RGL is not included as a possible score on the test norms.

The Armed Services Vocational Aptitude Battery (ASVAB) is administered to all recruits before they enlist in the Navy. The recruits included in this study had taken one of two series of ASVAB tests: Series 5-7 or Series 8-10. The aptitude score used in the study was the Armed Forces Qualification Test

(AFQT) score. The AFQT is a normative percentile score that is derived from a composite of selected ASVAB scores. The scores used in the composite for ASVAB series 5-7 are the word knowledge, numerical operations, and space perception scores. On ASVAB series 8-10, the composite uses the word knowledge, paragraph comprehension, arithmetic reasoning, and numerical operations scores.

The monthly CMI reports provided means for years of education, AFQT scores of recruits classified by the 6.0 RGL criterion (above or below), and RGL scores. The median was calculated for RGL scores by month. Frequency distributions were compiled and percentage distributions were computed for all recruits on RGL categories, high school graduation status, and combinations of the variables on high school graduation status and the 6.0 RGL criterion. Proportions were calculated for high school graduate and non-high school graduate recruits who scored below the 6.0 RGL criterion.

A tabular format was used to present the means and medians as descriptive statistics. The Chi-square technique and confidence limits for differences in proportions were employed for the analyses related to testing the hypotheses. The Chi-square procedure provided comparisons of frequency distributions for RGL scores, high school graduation status, and the 6.0 RGL criterion and high school graduation status by month of entry into the Navy. Confidence interval limits were computed to compare the proportions of high school graduates and non-high school graduates who scored below the 6.0 RGL by month and composite group.

Results

The results of the study are reported in a series of nine tables. The descriptive data are depicted in the first three tables. The remainder of the tables present the data and results of the inferential analyses related to the hypotheses.

Descriptive Data

Table 1 contains the means on years of education by month of entry into the Navy for the recruits. The composite mean for the one-year time period was 12.1 years of education. The monthly means varied by only one month from 12.0 to 12.1 years. Means of 12.0 years occurred for four months--October, 1983, and March-May, 1984.

The means presented in Table 2 are derived from the AFQT percentile scores of recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The composite means were 40.5 for all recruits who scored below the 6.0 RGL and 60.1 for all recruits who scored above the 6.0 RGL. Among the recruits with RGL scores below 6.0, the monthly means ranged from 37.5 in February, 1984, to 43.1 in December, 1983. Among the recruits with RGL scores above 6.0, the monthly means varied from a low of 58.6 in July, 1983, to a high of 62.2 in January, 1984. The differences in the means for the low and high RGL groups were about 20 percentile points for the composite means and ranged from 17 to 23 points by month. The differences between the low and high RGL groups were relatively stable during the 12-month period.

The medians and means for RGL of recruits by month of entry into the Navy are reported in Table 3. The median for the composite group was 12.1 RGL while the mean was 9.9 RGL. The monthly medians ranged from 12.0 RGL in March-May, 1984, to 12.? RGL in January, 1984. The means by month varied from a low of 9.8 RGL in March and May, 1984, to a high of 10.2 RGL in January, 1984. The monthly medians and means did not reveal appreciable variability but tended to be slightly greater during the middle months of the one-year time period.

Hypothesis 1

There are no differences in the distributions of recruits classified by RGL category and month of entry into the Navy. Table 4 presents the frequency

TABLE 1

MEANS ON YEARS OF EDUCATION FOR RECRUITS BY MONTH OF ENTRY

Month	N	Mean
June, 1983	6,333	12.1
July, 1983	5,432	12.1
August, 1983	5,708	12.1
September, 1983	6,629	12.1
October, 1983	4,055	12.0
November, 1983	4,937	12.1
December, 1983	4,473	12.1
January, 1984	5,070	12.1
February, 1984	5,020	12.1
March, 1984	6,416	12.0
April, 1984	5,679	12.0
May, 1984	7,988	12.0
TOTAL	67,740	12.1

TABLE 2

MEANS ON THE ARMED FORCES QUALIFICATION TEST SCORES FOR RECRUITS
BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

Month	Reading Grade Level Criterion			
	Below 6.0		Above 6.0	
	N	Mean	N	Mean
June, 1983	258	40.6	6,075	60.4
July, 1983	158	38.7	5,274	58.6
August, 1983	153	39.8	5,555	58.9
September, 1983	155	42.8	6,474	59.8
October, 1983	119	42.9	3,936	60.1
November, 1983	111	38.9	4,826	60.7
December, 1983	115	43.1	4,358	61.4
January, 1984	105	38.8	4,965	62.2
February, 1984	132	37.5	4,888	60.6
March, 1984	235	42.6	6,181	59.5
April, 1984	164	39.8	5,515	59.6
May, 1984	263	39.5	7,725	60.0
TOTAL	1,968	40.5	65,772	60.1

TABLE 3

MEDIANS AND MEANS ON READING GRADE LEVEL FOR RECRUITS
BY MONTH OF ENTRY

Month	N	Median	Mean
June, 1983	6,333	12.2	9.9
July, 1983	5,432	12.1	10.0
August, 1983	5,708	12.2	9.9
September, 1983	6,629	12.4	10.0
October, 1983	4,055	12.3	9.9
November, 1983	4,937	12.5	10.1
December, 1983	4,473	12.5	10.0
January, 1984	5,070	12.7	10.2
February, 1984	5,020	12.4	10.0
March, 1984	6,416	12.0	9.8
April, 1984	5,679	12.0	9.9
May, 1984	7,988	12.0	9.8
TOTAL	67,740	12.1	9.9

TABLE 4

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY READING GRADE LEVEL AND MONTH OF ENTRY

Month	Reading Grade Level Category														Total
	Below 3.0		3.0 - 3.9		4.0-6.0		6.1-8.0		8.1-10.0		10.1-12.0		above 12.0		
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f
June, 1983	18	.28	96	1.52	144	2.27	527	8.32	889	14.04	1,538	24.29	3,121	49.28	6,333
July, 1983	10	.18	20	.37	128	2.36	482	8.87	820	15.10	1,425	26.23	2,547	46.89	5,432
August, 1983	13	.23	22	.39	118	2.07	556	9.74	908	15.91	1,474	25.82	2,617	45.85	5,708
September, 1983	18	.27	25	.38	112	1.69	620	9.35	1,020	15.39	1,700	25.64	3,134	47.28	6,629
October, 1983	9	.22	23	.57	87	2.15	396	9.77	598	14.75	1,046	25.80	1,896	46.76	4,055
November, 1983	9	.18	21	.43	81	1.64	430	8.71	701	14.20	1,217	24.65	2,478	50.19	4,937
December, 1983	8	.18	19	.42	88	1.97	397	8.88	624	13.95	1,093	24.44	2,244	50.17	4,473
January, 1984	14	.28	10	.20	81	1.60	380	7.50	649	12.80	1,248	24.62	2,688	53.02	5,070
February, 1984	10	.20	17	.34	105	2.09	457	9.10	754	15.02	1,238	24.66	2,439	48.59	5,020
March, 1984	63	.98	27	.42	145	2.26	643	10.02	975	15.20	1,534	23.91	3,029	47.21	6,416
April, 1984	18	.32	19	.33	127	2.24	560	9.86	867	15.27	1,472	25.92	2,616	46.06	5,679
May, 1984	27	.34	55	.69	181	2.27	845	10.58	1,227	15.36	1,967	24.62	3,686	46.14	7,988
TOTAL	217	.32	354	.52	1,397	2.06	6,293	9.29	10,032	14.81	16,952	25.03	32,495	47.97	67,740

Chi-square = 428.410 (Chi-square = 85.82, df = 66, level of significance = .05)

and percentage distributions of recruits by RGL category and month of entry. The data on the composite group for the one-year period showed that 2.90% of the recruits had scores below the 6.0 RGL criterion--the criterion for referral to ART during this time period. The percentage of recruits who scored below the 6.0 RGL varied considerably among the 12 months as evidenced by a range from 2.08% in January, 1984, to 4.07% in June, 1983. The percentage of recruits who scored at or below the 8.0 RGL was 12.19% for the year with a monthly low of 9.58% in January, 1984, and a monthly high of 13.88% in May, 1984. For the composite group, 14.81% of the recruits were in the 8.1-10.0 RGL category and 25.03% were in the 10.1-12.0 RGL category. The monthly percentages varied only about 3% for the former category and 2% for the latter category. Although 47.97% of the composite group had RGL scores above 12.0, the monthly percentages ranged from 45.85% in August, 1983, to 53.02% in Jaunary, 1984. The Chi-square comparison of the RGL distributions of recruits by month of entry revealed significant differences across the 12 months, thereby leading to rejection of the null hypothesis tested at the .05 level of significance.

Hypothesis 2

There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions of recruits classified by high school graduation status and month of entry are reported in Table 5. The data for the composite group revealed that 95% of the recruits were high school graduates. The percentages of high school graduates were very high (more than 98%) during June-September, 1983, when a temporary restriction was imposed on Navy enlistment to high school graduates with exceptions being made only for highly qualified personnel. The lowest percentages were in April and May, 1984. The

TABLE 5

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1983	5,536	98.33	94	1.67	5,630
July, 1983	5,403	99.47	29	.53	5,432
August, 1983	5,669	99.44	32	.56	5,701
September, 1983	6,593	99.47	35	.53	6,628
October, 1983	3,833	94.57	220	5.43	4,053
November, 1983	4,682	94.97	248	5.03	4,930
December, 1983	4,269	95.55	199	4.45	4,468
January, 1984	4,868	96.11	197	3.89	5,065
February, 1984	4,747	94.66	268	5.34	5,015
March, 1984	5,886	91.75	529	8.25	6,415
April, 1984	5,071	89.29	608	10.71	5,679
May, 1984	7,160	89.63	828	10.37	7,988
TOTAL	63,717	95.09	3,287	4.91	67,004

Chi-square = 1,942.993 (Chi-square = 19.68, df = 11, level of significance = .05)

comparison of the frequency distributions of recruits on high school graduation status by month of entry utilizing the Chi-square procedure indicated that the distributions differed very significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 3

There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. Table 6 contains the frequency and percentage distributions of high school graduate recruits by the 6.0 RGL criterion and month of entry. The data for the composite group indicated that 2.90% of the high school graduate recruits scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of 2.05% in January, 1984, to a high of 3.92% in June, 1983. Although a consistent pattern is not evident, the percentages were generally lower during the middle months of the 12-month period. The results of the Chi-square comparison of the frequency distributions for high school graduate recruits by the 6.0 RGL criterion and month of entry showed that they differed significantly at the .05 level of significance. Consequently, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 4

There is no difference in the distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The frequency and percentage distributions of non-high school graduate recruits by the 6.0 RGL criterion and month of entry are depicted in Table 7. In the composite group, 2.31% of the recruits who were not high school graduates scored below the 6.0 RGL on comprehension. The monthly percentages varied from

TABLE 6

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF HIGH SCHOOL GRADUATE RECRUITS BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1983	217	3.92	5,319	96.08	5,536
July, 1983	158	2.92	5,245	97.08	5,403
August, 1983	151	2.66	5,518	97.34	5,669
September, 1983	154	2.34	6,439	97.66	6,593
October, 1983	115	3.09	3,718	96.91	3,833
November, 1983	109	2.33	4,573	97.67	4,682
December, 1983	114	2.67	4,155	97.33	4,269
January, 1984	100	2.05	4,768	97.95	4,868
February, 1984	126	2.65	4,621	97.35	4,747
March, 1984	216	3.67	5,670	96.33	5,886
April, 1984	150	2.96	4,921	97.04	5,071
May, 1984	239	3.34	6,921	96.66	7,160
TOTAL	1,849	2.90	61,868	97.10	63,717

Chi-square = 66.143 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 7

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF NON-HIGH SCHOOL GRADUATE RECRUITS BY SIXTH GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1983	0	.00	94	100.00	94
July, 1983	0	.00	29	100.00	29
August, 1983	1	3.12	31	96.88	32
September, 1983	1	2.86	34	97.14	35
October, 1983	4	1.82	216	98.18	220
November, 1983	2	.81	246	99.19	248
December, 1983	1	.50	198	99.50	199
January, 1984	4	2.03	193	97.97	197
February, 1984	6	2.24	262	97.76	268
March, 1984	19	3.59	510	96.41	529
April, 1984	14	2.30	594	97.70	608
May, 1984	24	2.90	804	97.10	828
TOTAL	76	2.31	3,211	97.69	3,287

Chi-square = 13.991 (Chi-square = 19.68, df = 11, level of significance = .05)

a low of 0.0% in June-July, 1983, to a high of 3.59% in March, 1984. While the percentages were highly variable during the first nine months, the number of non-high school graduate recruits scoring below the 6.0 RGL was six or less each month. The Chi-square comparison of the frequency distributions of non-high school graduate recruits by the 6.0 RGL criterion and month of entry revealed that they did not differ significantly at the .05 level of signficance. Thus, the null hypothesis that the distributions are not different was accepted.

Hypothesis 5

There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions are reported in Table 8 for the recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry. The data showed that 96.05% of the recruits who obtained scores below the 6.0 RGL on comprehension were high school graduates. The monthly percentages ranged from 100% in June-July, 1983, to 90.87% in May, 1984. As expected, the percentages were highest for the months when few non-high school graduates were allowed to enlist in the Navy (June - September, 1983). A general decline in percentages is evident across the 12 months. The comparison of the frequency distributions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry using the Chi-square technique revealed that they differed significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 6

There is no difference in the proportions of high school graduate and

TABLE 8

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1983	217	100.00	0	.00	217
July, 1983	158	100.00	0	.00	158
August, 1983	151	99.34	1	.66	152
September, 1983	154	99.35	1	.65	155
October, 1983	115	96.64	4	3.36	119
November, 1983	109	98.20	2	1.80	111
December, 1983	114	99.13	1	.87	115
January, 1984	100	96.15	4	3.85	104
February, 1984	126	95.45	6	4.55	132
March, 1984	216	91.91	19	8.09	235
April, 1984	150	91.46	14	8.54	164
May, 1984	239	90.87	24	9.13	263
TOTAL	1,849	96.05	76	3.95	1,925

Chi-square = 66.686 (Chi-square = 1..68, df = 11, level of significance = .05)

non-high school graduate recruits who score below the 6.0 RGL criterion. Table 9 presents data on the proportions of recruits who scored below the 6.0 RGL classified by high schcol graduation status and month of entry into the Navy. The data on the proportions of recruits who scored below the 6.0 RGL are discussed above as percentages for high school graduates and non-high school graduates separately. (See Tables 6 and 7.) An inspection of the relative proportions of the two groups revealed that a higher proportion (.0059) of the high school graduates than non-high school graduates obtained scores below the 6.0 RGL criterion for the one-year period. In 10 of the 12 months (except for August and September, 1983), the high school graduates had the higher proportion. The confidence limits for the comparison of the difference in the proportions for the composite groups revealed that the overall proportions differed significantly at the .05 level of significance because the limits did not include 0 within the range. The differences were also significant for 5 of the 12 months. In all cases where significant diffferences were observed, the proportions were higher for the high school graduates than the corresponding proportions for the non-high school graduates. The results of comparing the proportions for the two composite groups required rejection of the null hypothesis of no difference in the proportions at the .05 level of significance.

Conclusions

The Navy's recruit population is described in this study based on data for selected variables that apply to the recruits entering the Navy during a 12-month period of time. The conclusions are derived from the descriptive analyses and the results of testing six hypotheses pertaining to specific variables.

With regard to years of education, the typical Navy recruit has completed

TABLE 9

COMPARISON OF PROPORTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				Confidence Limits		
	Yes		No		.025	to	.975
Month	N	p	N	p			
June, 1983	5,535	.0392	94	.0000	.0341	to	.0443
July, 1983	5,403	.0292	29	.0000	.0247	to	.0337
August, 1983	5,669	.0266	32	.0312	-.0650	to	.0558
September, 1983	6,593	.0234	35	.0286	-.0605	to	.0501
October, 1983	3,833	.0309	220	.0182	.0079	to	.0175
November, 1983	4,682	.0233	248	.0081	.0033	to	.0271
December, 1983	4,269	.0267	199	.0050	.0108	to	.0226
January, 1984	4,868	.0205	197	.0203	-.0199	to	.0203
February, 1984	4,747	.0265	268	.0224	-.0147	to	.0219
March, 1984	5,886	.0367	529	.0359	-.0158	to	.0174
April, 1984	5,071	.0296	608	.0230	-.0062	to	.0194
May, 1984	7,160	.0334	828	.0290	-.0078	to	.0166
TOTAL	63,717	.0290	3,287	.0231	.0006	to	.0112

slightly more than 12 years of education. Nineteen-twentieths of the recruits are high school graduates. The inferential analysis on high school graduation status indicates that higher percentages of high school graduates are included among the recruits during and immediately following the period of enlistment restrictions to primarily high school graduates.

The aptitude of recruits as reflected by means on the AFQT does not appear to vary in any consistent pattern among the recruits with RGL scores below 6.0 or the recruits with RGL scores above 6.0. The means indicate that recruits who score above the 6.0 criterion have greater aptitude than recruits who score below the 6.0 RGL criterion. The difference in the aptitude score means for the two groups suggests that they are dissimilar populations.

The reading comprehension means of recruits exhibit relative stability across the 12-month period, placing the composite group near the 10th grade level. The mean is slightly higher during the middle months of the one-year period. The median for the year places the group near the 12th grade level. The median for the composite group shows a continuation of a slight trend toward higher comprehension levels among recruits as reported by Bowman and Kerr for the three preceding 12-month periods (1981, 1982, 1983).

The frequency distributions of recruits by RGL categories reveal differences in the composition of the recruit groups when considered by month of entry into the Navy. Separate analyses of the distributions of high school graduate and non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry indicate that differences also exist across the 12-month period for the high school graduates. Among the high school graduate recruits, the percentages who score below the 6.0 RGL generally are lower during the middle months of the 12-month period of time.

Differences exist in the 12-month distributions of recruits who obtain RGL

scores below 6.0 when classified by high school graduation status and month of entry in the Navy. Higher percentages of the recruits who score below the 6.0 RGL are high school graduates in the earlier months of the period than in the later months. A higher proporiton of the composite group of high school graduate recruits score below the 6.0 RGL than is found in the composite group of non-high school graduate recruits. Significant differences exist for the composite groups and for the monthly groups in 5 of the 12 months.

The findings suggest that the recruit population remains relatively stable while showing slight variability with regard to means on years of education, reading comprehension skills, and aptitude scores. Several variables reveal variability across the 12-month period. Factors for which distributions by month differ include RGL scores, high school graduation status, high school graduate recruits who score above and below the 6.0 RGL criterion, and high school graduation status of recruits who score below the 6.0 RGL. The proportion of recruits who obtain RGL scores below 6.0 also is higher for high school graduates than for non-high school graduates.

This study indicates that the recruits who enter the Navy are likley to vary in different months of the year on some important factors. As a result, ART management personnel need to plan for adjustments in the requirements for resources as the recruit population changes throughout the year. By being aware of the variability in demands, more efficient allocation and utilization of the resources can be achieved for ART and the Recruit Training Centers. The study also demonstrates that information is available through the monthly CMI reports on Navy recruit characteristics to improve the effectiveness of program management. Consistent monitoring of these reports and basic analyses of the data would enable the staff to determine the changes occuring in the composition of the recruit population that affect the ART Program.

References

Biersner, R. J. (1975). Reading grade levels of Navy rate training manuals and nonresident career courses (CNET Report 2-75). Pensacola, FL: Chief of Naval Education and Training.

Bowman, H. L., Kaiser, R. A., Jones, P. L., & Petry, J. R . (1984). Literacy skills curriculum for Academic Remedial Training (1984). Millington, TN: Chief of Naval Technical Training.

Bowman, H. L., & Kerr, N. J. (1979). The developmenat and installation of a reading program for Academic Remdial Training in the U.S. Navy: skill profiles of recruits. Paper presented at the Mid-South Educational Research Association Annual Meeting, Little Rock, AR.

Bowman, H. L., & Kerr, N. J. (1981). An investigation of U.S. Navy recruit characteristics on reading comprehension and related varaibles. Paper presented at the Mid-South Educational Research Association Annual Meeting, Lexington, KY.

Bowman, H. L., & Kerr, N. J. (1982) A descriptive study on the reading comprehension and related characteristics of U.S. Navy recruits: a twelve-month profile. Paper presented at the Mid-South Educational Research Association Annual Meeting, New Orleans, LA.

Bowman, H. L., & Kerr, N. J. (1983). Reading comprehension and related characteristics of U.S. Navy recruits: a twelve-month description. Paper presented at the Mid-South Educational Research Association Annual Meeting, Nashville, TN.

Chief of Naval Technical Training. (1978). Academic Remedial Training curriculum. Millington, TN: Chief of Naval Technical Training.

Chief of Naval Technical Training. (1980). Verbal skills curriculum. Millington, TN: Chief of Naval Technical Training.

CNTECHTRAINST 1540.42. (1978). Academic remedial training (ART). Millington, TN: Chief of Naval Technical Training.

Duffy, T.M., & Nugent, W.A. (1978). Reading skill levels in the Navy (NPRDC Technical Report 78-19). San Diego: Navy Personnel Research and Development Center.

Hoiberg, A., Hysham, C. J., & Berry, N. H. (1974). Effectiveness of recruits assigned to Academic Remedial Training. Psychological Reports, 34, 1007-1014.

MacGinitie, W. (1978). Gates-MacGinitie reading tests (2nd ed). Boston: Houghton-Mifflin Company.

OPNAVINST 1510.11. (1982). Enlisted fundamental skills training. Washington: Department of the Navy.

SECNAVINST 1510.3. (1978). Remedial training in basic skills. Washington: Department of the Navy.

Sticht, T. G. (1982). Basic skills in defense (Final Report 82-6). Alexandria, VA: Human Resources Research Organization.

United States Military Enlistment Processing Command. (1967-80). Armed services vocational aptitude battery (Series 5-10). Ft. Sheridan, IL: United States Military Enlisthment Processing Command.

Zierdt, L. E. (1976). Remedial reading programs for personnel entering the United States Navy. Research report submitted to Air War College, Air University, Maxwell Air Force Base, AL.